

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:
DAVID J. RIKKERS
BROWN RUENICK BERLACK ISRAELS, LLP
ONE FINANCIAL CENTER
BOSTON, MA 02111

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Applicant's or agent's file reference 24876/1-PCT		Date of mailing (day/month/year) 16 NOV 2005
		FOR FURTHER ACTION See paragraph 2 below
International application No. PCT/US05/00713	International filing date (day/month/year) 10 January 2005 (10.01.2005)	Priority date (day/month/year) 09 January 2004 (09.01.2004)
International Patent Classification (IPC) or both national classification and IPC IPC(7): A01K 61/00 and US Cl.: 119/215		
Applicant BRAUMAN, RICHARD S.		

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

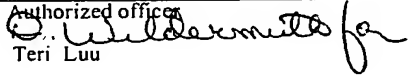
2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/ US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (571) 273-3201	Date of completion of this opinion 10 November 2005 (10.11.2005)	Authorized officer  Teri Luu Telephone No. (800)786-9199
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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/US05/00713

Box No. I Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of:

- ☒ the international application in the language in which it was filed
- ☐ a translation of the international application into _____, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

a. type of material

- ☐ a sequence listing
- ☐ table(s) related to the sequence listing

b. format of material

- ☐ on paper
- ☐ in electronic form

c. time of filing/furnishing

- ☐ contained in the international application as filed.
- ☐ filed together with the international application in electronic form.
- ☐ furnished subsequently to this Authority for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/US05/00713

Box No. V Reasoned statement under Rule 43 bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims <u>2, 3, 6-39</u>	YES
	Claims <u>1,4,5</u>	NO
Inventive step (IS)	Claims <u>8-39</u>	YES
	Claims <u>1-7</u>	NO
Industrial applicability (IA)	Claims <u>1-39</u>	YES
	Claims <u>NONE</u>	NO

2. Citations and explanations:

Claims 1, 4, and 5 lack novelty under PCT Article 33(2) as being anticipated by Brune et al. (6,192,833). Brune et al. disclose an aquaculture system comprising a photosynthetic culture which may be housed in a confined space, column, tank or raceway; an enclosure associated with the photosynthetic culture tank and enclosing a gas above contents of the photosynthetic culture tank; and a sensor for sensing a level of at least one component of the gas, oxygen, pH, ammonia, and temperature.

Claims 2,3,6 and 7 lack an inventive step under PCT Article 33(3) as being obvious over Brune et al. Brune et al. disclose an aquaculture tank, however a translucent or transparent cover fitted to the tank is not disclosed. Aquaculture tanks are well known to have covers to enclose the environment, and preventing inadvertent entry into or escape from the tank. Although Brune et al. disclose that the system includes numerous sensors for sensing oxygen, pH, ammonia, and temperature it is not disclosed that levels of carbon dioxide or phosphorous compounds. It would have been obvious to one of ordinary skill in the art at the time the invention was made that the sensors also test for carbon dioxide and phosphorous levels since it is known that their levels affect or are affected by the aquaculture population.

Claims 8-39 meet the criteria set out in PCT Article 33(2)-(3), because the prior art does not teach or fairly suggest a photosynthetic culture tank, production culture tank, a carbon dioxide stripper associated with the production culture tank and coupled to the photosynthetic culture tank; a trigger signal generator associated with either tank, and a water transfer device responsive to the trigger signal. Nor is it taught a method of aquaculture comprising growing a photosynthetic first species in a photosynthetic culture tank; providing the first species to a second species in a food production culture tank that eats the first species; providing the second species to a fish in a production culture tank; harvesting the fish, and providing a waste product to a scavenging species in a scavenging species tank. Nor is it taught a method of aquaculture comprising growing a photosynthetic first species in a first tank having a first water chemistry; providing the first species to a second species in a second tank having a different water chemistry from the first tank wherein the second species eats the first species; processing the second species into pellets; and providing the second species to a fish in a third tank.

Claims 1-39 meet the criteria set out in PCT Article 33(4), and thus have industrial applicability because the subject matter claimed can be made or used in industry.

NOTES TO FORM PCT/ISA/220

These Notes are intended to give the basic instructions concerning the filing of amendments under Article 19. The Notes are based on the requirements of the Patent Cooperation Treaty, the Regulations and the Administrative Instructions under that Treaty. In case of discrepancy between these Notes and those requirements, the latter are applicable. For more detailed information, see also the *PCT Applicant's Guide*, a publication of WIPO.

In these Notes, "Article," "Rule" and "Section" refer to the provisions of the PCT, the PCT Regulations and the PCT Administrative Instructions, respectively.

INSTRUCTIONS CONCERNING AMENDMENTS UNDER ARTICLE 19

The applicant has, after having received the international search report, one opportunity to amend the claims of the international application. It should however be emphasized that, since all parts of the international application (claims, description and drawings) may be amended during the international preliminary examination procedure, there is usually no need to file amendments of the claims under Article 19 except where, e.g. the applicant wants the latter to be published for the purposes of provisional protection or has another reason for amending the claims before international publication. Furthermore, it should be emphasized that provisional protection is available in some States only.

What parts of the international application may be amended ?

Under Article 19, only the claims may be amended

During the international phase, the claims may also be amended (or further amended) under Article 34 before the International Preliminary Examining Authority. The description and drawings may only be amended under Article 34 before the International Preliminary Examining Authority.

Upon entry into the national phase, all parts of the international application may be amended under Article 28 or, where applicable, Article 41.

When ? Within 2 months from the date of transmittal of the international search report or 16 months from the priority date, whichever time limit expires later. It should be noted, however, that the amendments will be considered as having been received on time if they are received by the International Bureau after the expiration of the applicable time limit but before the completion of the technical preparations for international publication (Rule 46.1).

Where not to file the amendments ?

The amendments may only be filed with the International Bureau and not with the receiving Office or the International Searching Authority (Rule 46.2).

Where a demand for international preliminary examination has been/is filed, see below.

How ? Either by cancelling one or more entire claims, by adding one or more new claims or by amending the text of one or more of the claims as filed

A replacement sheet must be submitted for each sheet of the claims which, on account of an amendment or amendments, differs from the sheet originally filed.

All the claims appearing on a replacement sheet must be numbered in Arabic numerals. Where a claim is cancelled, no renumbering of the other claims is required. In all cases where claims are renumbered, they must be renumbered consecutively (Administrative Instructions, Section 205(b)).

The amendments must be made in the language in which the international application is to be published.

What documents must/may accompany the amendments ?

Letter (Section 205(b)):

The amendments must be submitted with a letter.

The letter will not be published with the international application and the amended claims. It should not be confused with the "Statement under Article 19(1)" (see below, under "Statement under Article 19(1)").

The letter must be in English or French, at the choice of the applicant. However, if the language of the international application is English, the letter must be in English; if the language of the international application is French, the letter must be in French.